Title: High Resolution WFPC2 Imaging of IRAS 09104+4109

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Abstract :

With a infrared luminosity of nearly 10^13 Lsuns, IRAS 09104+4109 is the most luminous galaxy with z<0.5 in the IRAS All Sky Survey. A radio-loud Seyfert 2 type optical spectrum, a cD host galaxy in a rich cluster, and a massive cooling flow make IRAS 09104+4109 unique among ultraluminous infrared galaxies. Cannibalized cluster members and the cooling intercluster medium may contribute both the fuel and the dust needed to re-radiate the power of IRAS 09104+4109 into the far-infrared. We have imaged IRAS 09104+4109 in the WFPC2 F622W, F814W, and FR680N filters on the HST to obtain rest frame 4300A, 5700A, and [OIII] emission line images on sub-kpc scales. IRAS 09104+4109 displays a complex morphology on the smallest scales, with radiating filaments, an asymmetric [OIII] nebula, and a number of very faint, irregular blue objects surrounding the cD galaxy. We combine these HST data with new, high resolution K-band imaging from the W.M. Keck Telescope and discuss the nature and interplay between the enshrouded QSO nucleus, the cD host galaxy and the irregular cluster.